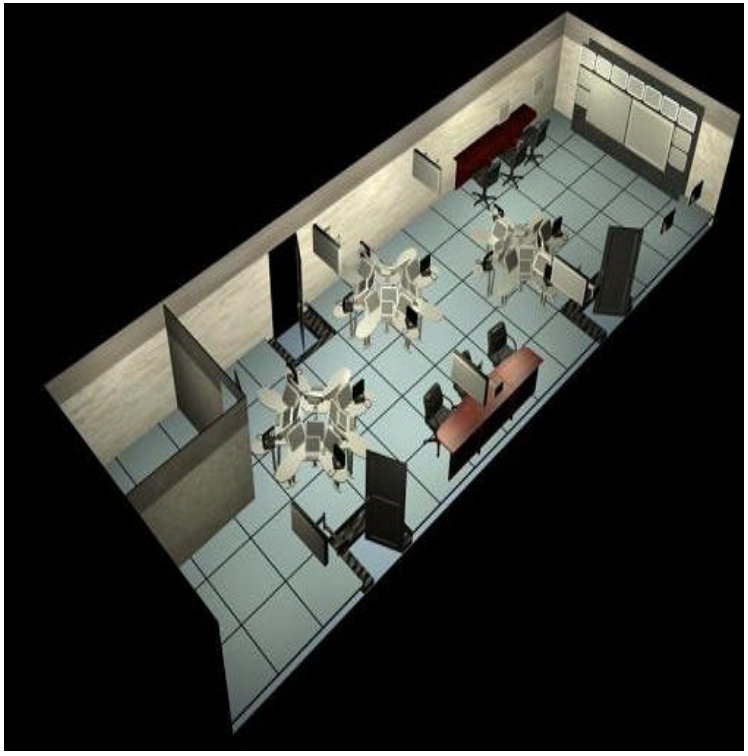
Future Command Centers (FCC)



Brief to FORCEnet Industry Conference

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Agenda

- FCC Background
- Future Command Center Vision
- Operational Drivers
- Specific Technology Requirements

FCC IPT Background

- Deputy PEO C4I & Space established Future Command Center IPT in August 2005 to:
  - Develop shared vision for command centers
  - Assess POM08 submissions in light of command center vision
    - Align PEO product lines
    - Push for command center “wholeness”
    - ID technology gaps for R&D community and industry to address
  - Derive a target command center architecture
  - Derive a repeatable command center design and implementation process

FCC Vision

- Every decision center needs:
  - Some number of general purpose user workstations with
    - Multiple heads (monitors)
    - Access to multiple networks
    - General purpose locally installed client applications and access to lightweight applications on the net
    - Access to a large variety of discoverable data sources
  - Voice communications for each user, VTC capability
  - A shared display capability
  - Afloat platforms will also need a smaller number of dedicated tactical systems (navigation, weapon system control)
- Beyond these minimum capabilities it's mostly a matter of increasing scale to match the mission and physical space (number of workstations, size of shared display, number of networks)
- Therefore it is feasible to design a generic decision center "architecture" that can be applied to almost any environment
  - Will need to tailor the knowledge management system for Command-specific work flow and "personality"

Operational Drivers

- Mission flexibility
  - Physical flexibility (easy space reconfiguration)
  - Functional flexibility (displays and workstation location, tools, data sources, communications)
- Partner flexibility
  - Support Joint, Coalition & NGO operations
- Role flexibility
  - From independent operations to hosting JFMCC or JTF
- Reduced manning
  - More effective/efficient operators
  - Reach back support
  - Reduced maintenance

Physical Flexibility

- Minimize number of cables to each workstation
  - Combine all non-life critical data onto the IP network (VoIP for voice comms, stream site TV and news feeds over the network)
  - Wireless networks - ideally at multiple classification levels, high enough bandwidth to support streaming video
  - Combine multiple classifications of data on single network
  - Video-over-IP to drive the shared displays from any workstation
- Flexible cable plant - ability to tie into power and network at any location
- Small form factor computers that support MLS, multiple displays and audio in/out
- If don't have true MLS solution need way to quickly sanitize and reload systems for use at another classification (ultra-thin clients, removable hard drives)

Functional Flexibility

- Maximum number of workstations need to be general purpose (with exception of missile/gun systems)
- SOA to enable user to dynamically compose functionality and select data sources
  - Need core services (discovery, IA, mediation, collaboration)
  - Need a selection of generally useful client applications (maps, links & nodes, timeline,…)
  - Need the data services (expose the data in every POR)
  - Need a user interface that guides the user through composing mission functionality (a portal?)
- Workstations either need to be able to be moved quickly from network to network or need MLS capability so can live on parallel networks
- Need to be able to direct data from any workstation to any shared display

Partner Flexibility

- Goal
  - An affordable, easy to use, accredited, off-the-shelf **cross domain** data exchange solution that works in an SOA environment
  - An affordable, easy to use, accredited, off-the-shelf **cross domain** data solution for the shared display system
- Near-term need
  - At least a workstation that can quickly change operating classification (removable disk, ultra-thin client, CONOP for flashing disk images, ?)
  - Ideally want a single workstation that can simultaneously access multiple security levels and that is safe enough to be operated by a NGO or foreign national with no clearance (NETOP, MLTC, ?)

Role Flexibility

- Same technical requirements as Functional Flexibility
- Need to be able to reconfigure the available space to support additional personnel or to perform split missions
  - Provide drops or wireless LAN for non-organic hardware that can integrate to the network and feed the shared displays

Reduced Manning

- To make good decisions quickly with less personnel will require purpose-built decision support tools including
  - Use of user-centered design - start from the decisions that are made and back into the data needed and how to present it
  - Intelligent agents to collect data, monitor workflow and execution
  - C2-oriented knowledge management systems to combine data from multiple data sources into an intuitive presentation
  - Dedicated decision maker TDAs like COA selection tools
- IT systems designed for decreased maintenance costs
  - Centrally managed or ultra-thin workstations to reduce system admin work load
  - Instrumented software, networks and computers to allow for remote diagnostics and failure detection
  - Virtual servers to support flexibility, capability reconstitution with minimal staff
- Consistent command center environment reduces training costs as personnel rotate from organization to organization

Reduced Manning

- CONOP, collaborative tools, network bandwidth to support reach back (assumes there is manning ashore to provide reach back support)
  - May require desktop VTC capability (level of connection with remote crewmates, need for multiple interactions in parallel)
  - Need to develop more natural “telepresence” capability with remote support sites (persistent or “on call” VTC)
  - Transparent file sharing across wide geographic area
  - Ability to share large screen display (live, snapshot, playback)

FY06 Numbered Fleet IT Top 10

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1. **Coalition Communications**
2. Reliable SATCOM
3. Standards
4. Increased Data Throughput
5. Computer Network Defense
6. **COP**
7. **Real Time Collaboration**
8. **Streamlined Processes for Emergent Ops**
9. **Next Generation Knowledge Management**
10. **More Wireless Technology**

Bolded items support FCC requirements